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FIRST REPORT OF *GLOBODERA PALLIDA* IN MALTA

by

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Summary. A two-year survey of potato fields on the Maltese Islands was conducted from 1996-1998. Species of *Globodera* were found in 18% of the fields surveyed. *Globodera pallida* was detected for the first time on the Maltese Islands using the ELISA test.

Potato (*Solanum tuberosum* L.) is the most important cash crop grown on the Maltese Islands. In Malta, few studies have assessed losses due to plant parasitic nematodes (Lamberti and Dandria, 1979). In 1987, Lamberti *et al.* reported *Globodera rostochiensis* (Woll.) Mulvey *et* Stone on the island of Malta, but not on the neighboring island of Gozo. *Globodera pallida* Stone has never been reported on either island. The morphology of the cysts and morphometrics of the 2nd stage juveniles collected by Lamberti *et al.* did not conform to the description of *G. pallida* (Stone, 1973). A two-year nematode survey of potato fields on Malta and Gozo was conducted from 1996-1998, the purpose of which was to identify nematode species that might limit potato production and note their distribution.

Material and methods

Approximately 75 fields were sampled on the islands of Malta and Gozo. Fields which had been in continuous potato production for several years were chosen for the survey. Cysts were extracted using a flotation method.

A double antibody sandwich ELISA using monoclonal antibodies specific to *Globodera* spp. and *G. pallida* was performed on individual cysts of nematodes collected from a field in Mgarr, Malta, in July, 1997. In addition to cysts from the Mgarr field, other cyst populations on Malta were collected and ELISA was repeated in July, 1998. For each sample, one cyst was squeezed into a micro-tissue homogenizer and checked under a preparation microscope. Five µl Tris/HCl buffer, pH 7.4, was added and the eggs were homogenized. An additional 150 µl Tris/HCl was added and the homogenate transferred to an Eppendorf 1.5 ml vial. The homogenizer was rinsed with 150 µl Tris/HCl and this was added to the vial. Dilutions of 1:1 and 1:9 were prepared and 100 µl of each dilution were added to wells of a microtitre plate previously coated with the *G. pallida* antibody. Controls with Tris/HCl buffer and positive and negative samples were included in all tests (Schots *et al.*, 1988). The microtitre plates were read at an absorbance of 405 nm using an ELISA Colorimeter reader.

Results and discussion

Globodera pallida was detected by ELISA on all cyst preparations isolated from the field in

Mgarr, Malta, during the 1997 survey. A total of 40% of the cysts taken from the same field in 1998 tested positive for *G. pallida*. Other cyst nematode populations collected in 1998 from the island of Malta tested positive to a monoclonal antibody preparation for *Globodera* spp., but not to the *G. pallida* monoclonal antibody. It is assumed that these populations are *G. rostochiensis* since they only reacted with monoclonal antibodies specific for proteins from both *Globodera* spp. Neither *Globodera* spp. was detected in samples from the island of Gozo during these surveys or during the 1987 survey of Lamberti *et al.*. On the island of Malta 18% of the fields sampled contained either one, or both, of the potato cyst nematodes. Similar to findings by Lamberti and Dandria (1979), populations were usually small and appeared to cause minimal crop damage, indicating that some environmental factor was keeping these nematode populations in check.

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